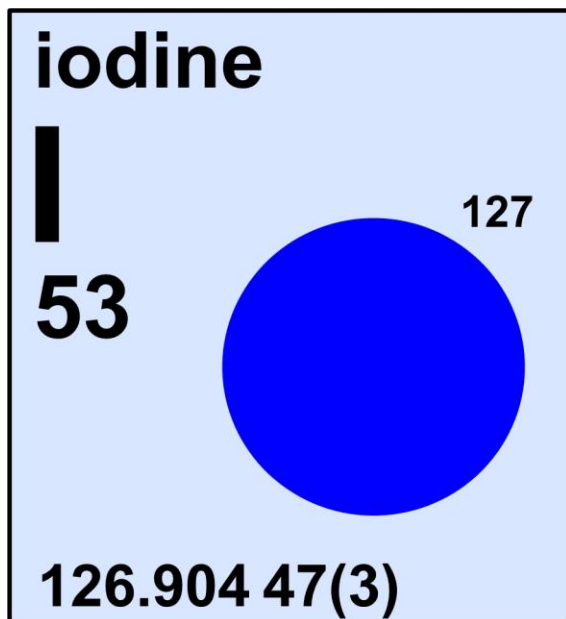
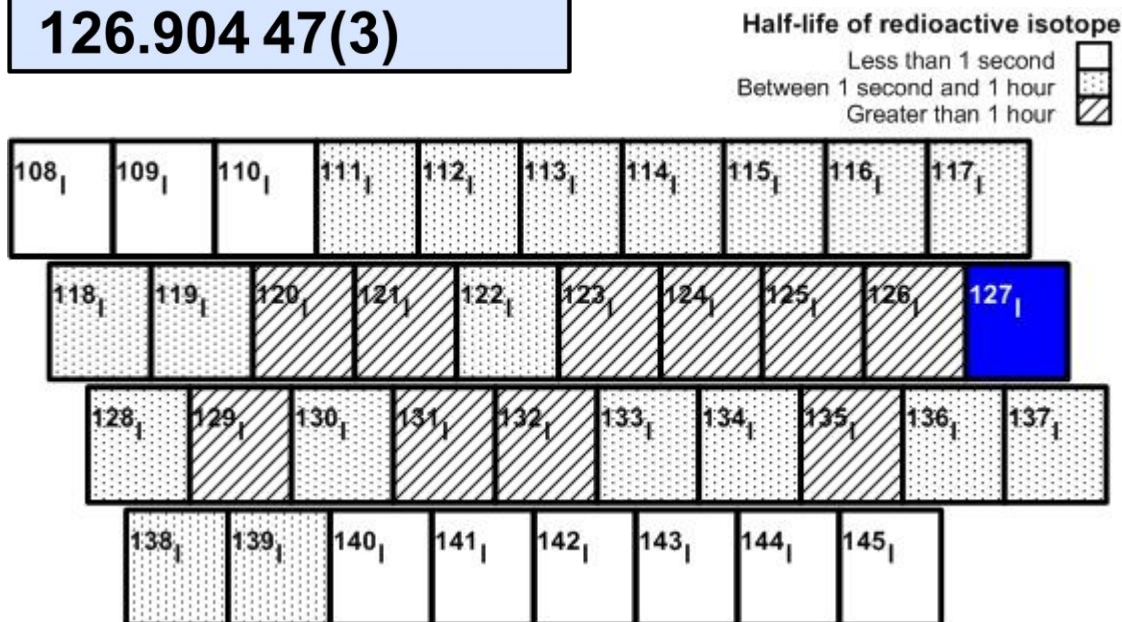


iodine



Stable isotope	Atomic mass*	Mole fraction
^{127}I	126.904 473	1.0000

* Atomic mass given in unified atomic mass units, u.



Important applications of stable and/or radioactive isotopes

Isotopes as environmental tracers

1. In nuclear reactors and weapons tests uranium and plutonium undergo fission processes in which one of the fission products is the long-lived isotope ^{129}I .
2. ^{129}I can be used as a groundwater tracer to determine evidence of nuclear fission and it can also be tracked in rainwater as evidence of a fission event in the air (weapons explosion).
3. The stable naturally abundant isotope ^{127}I and the nuclear fission product ^{129}I are best measured using accelerator mass spectrometry to get $^{129}\text{I}/^{127}\text{I}$ ratios.



Figure 1: The water source near this nuclear reactor facility and water sources connected to it are likely to have ^{129}I as evidence of nuclear fission event.

Isotopes in medicine

1. Encapsulated ^{125}I is used in radiotherapy at the site of a cancerous tumor.
2. Radioimaging uses positron emission tomography (PET) to view ^{124}I in the body.
3. ^{123}I or ^{131}I can be used with single photon emission computer spectroscopy (SPECT) for radioimaging.